

What is claimed is:

1 An apparatus for provider connection, in a mobile communication system including a communication terminal on a mobile device side, a mobile device, an adapter for mobile data communication, a mobile switch and an access server, which is provided in said mobile switch, characterized in that the apparatus comprises:

5 a first detection circuit for discriminating a message in a TCP/IP packet sent from said access server and detecting an end of data transfer;

10 a second detection circuit for discriminating a message in a TCP/IP packet sent from said communication terminal on a mobile device side, which is connected to said mobile device and said adapter for mobile data communication, and detecting that said communication terminal on a mobile device side has recognized an end of data transfer; and

15 a line signal transmitting and receiving circuit for providing an indication to said mobile switch via a signal repeating device based on detection results of said first and said second detection circuits to release talking channels for TCP/IP data communication within a mobile communication network.

2 An apparatus for provider connection recited in claim 1, wherein said access server is an interface device between

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a serial communication line and an internet protocol communication line, and is a device provided on a side of an internet service provider, and

in case that a value of a logical product of the detection results of said first and said second detection circuits is true, said line signal transmitting and receiving circuit provides an indication to said mobile switch via said signal repeating device to release the talking channels for TCP/IP data communication within said mobile communication network.

3 An apparatus for provider connection recited in claim 1, further comprising means for releasing talking channels for TCP/IP data communication within said mobile communication network when the data transfer of TCP/IP data communication ends.

4 An apparatus for provider connection, in a mobile communication system including a communication terminal on a mobile device side, a mobile device, an adapter for mobile data communication, a mobile switch and an access server, which is provided in said mobile switch, characterized in that the apparatus comprises:

a first detection circuit for discriminating a message in a TCP/IP packet sent from said communication terminal on a mobile device side, which is connected to said mobile device and said

adapter for mobile data communication, and detecting an end of data transfer;

a second detection circuit for discriminating a message in a TCP/IP packet sent from said access server and detecting that a communication terminal on an internet side has recognized an end of data transfer; and

a line signal transmitting and receiving circuit for providing an indication to said mobile switch via a signal repeating device based on detection results of said first and said second detection circuits to release talking channels for TCP/IP data communication within a mobile communication network.

5 An apparatus for provider connection recited in claim 4, wherein said access server is an interface device between a serial communication line and an internet protocol communication line, and is a device provided on a side of an internet service provider, and

in case that a value of a logical product of the detection results of said first and said second detection circuits is true, said line signal transmitting and receiving circuit provides an indication to said mobile switch via said signal repeating device to release the talking channels for TCP/IP data communication within said mobile communication network.

6 An apparatus for provider connection recited in claim

4, further comprising means for releasing talking channels for TCP/IP data communication within said mobile communication network when the data transfer of TCP/IP data communication ends.

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7 A mobile communication system including a communication terminal on a mobile device side, a mobile device, an adapter for mobile data communication, a mobile switch and an access server, characterized in that an apparatus for provider connection, which is provided in said mobile switch, comprises:

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a first detection circuit for discriminating a message in a TCP/IP packet sent from said access server and detecting an end of data transfer;

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a second detection circuit for discriminating a message in a TCP/IP packet sent from said communication terminal on a mobile device side, which is connected to said mobile device and said adapter for mobile data communication, and detecting that said communication terminal on a mobile device side has recognized an end of data transfer; and

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a line signal transmitting and receiving circuit for providing an indication to said mobile switch via a signal repeating device based on detection results of said first and said second detection circuits to release talking channels for TCP/IP data communication within a mobile communication network.

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8 A mobile communication apparatus recited in claim 7,
wherein said access server is an interface device between a
serial communication line and an internet protocol
communication line, and is a device provided on a side of an
5 internet service provider, and

in case that a value of a logical product of the detection
results of said first and said second detection circuits is
true, said line signal transmitting and receiving circuit of
said apparatus for provider connection provides an indication
10 to said mobile switch via said signal repeating device to release
the talking channels for TCP/IP data communication within said
mobile communication network.

9 A mobile communication apparatus recited in claim 7,
15 further comprising means for releasing talking channels for
TCP/IP data communication within said mobile communication
network when the data transfer of TCP/IP data communication
ends.

10 A mobile communication system including a communication
terminal on a mobile device side, a mobile device, an adapter
for mobile data communication, a mobile switch and an access
server, characterized in that an apparatus for provider
connection, which is provided in said mobile switch, comprises:

25 a first detection circuit for discriminating a message in

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a TCP/IP packet sent from said communication terminal on a mobile device side, which is connected to said mobile device and said adapter for mobile data communication, and detecting an end of data transfer;

5 a second detection circuit for discriminating a message in a TCP/IP packet sent from said access server and detecting that a communication terminal on an internet side has recognized an end of data transfer; and

10 a line signal transmitting and receiving circuit for providing an indication to said mobile switch via a signal repeating device based on detection results of said first and said second detection circuits to release talking channels for TCP/IP data communication within a mobile communication network.

15 11 A mobile communication system recited in claim 10, wherein said access server is an interface device between a serial communication line and an internet protocol communication line, and is a device provided on a side of an internet service provider, and

20 in case that a value of a logical product of the detection results of said first and said second detection circuits is true, said line signal transmitting and receiving circuit of said apparatus for provider connection provides an indication to said mobile switch via said signal repeating device to release
25 the talking channels for TCP/IP data communication within said

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mobile communication network.

12 A mobile communication apparatus recited in claim 10,
further comprising means for releasing talking channels for
5 TCP/IP data communication within said mobile communication
network when the data transfer of TCP/IP data communication
ends.

13 A mobile TCP/IP data communication method in a mobile
10 communication system including a communication terminal on a
mobile device side, a mobile device, an adapter for mobile data
communication, a mobile switch and an access server,
characterized in that:

a message in a TCP/IP packet sent from said access server
15 is discriminated, and an end of data transfer is detected;

a message in a TCP/IP packet sent from said communication
terminal on a mobile device side, which is connected to said
mobile device and said adapter for mobile data communication,
is discriminated, and it is detected that said communication
20 terminal on a mobile device side has recognized an end of data
transfer; and

in case that a value of a logical product of the detection
results of said first and said second detection circuits is
true, an indication is provided to said mobile switch via a
25 signal repeating device to release talking channels for TCP/IP

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data communication within a mobile communication network.

14 A mobile TCP/IP data communication method in a mobile communication system including a communication terminal on a mobile device side, a mobile device, an adapter for mobile data communication, a mobile switch and an access server, characterized in that:

a message in a TCP/IP packet sent from said communication terminal on a mobile device side, which is connected to said mobile device and said adapter for mobile data communication, is discriminated, and an end of data transfer is detected;

a message in a TCP/IP packet sent from said access server is discriminated, and it is detected that a communication terminal on an internet side has recognized an end of data transfer; and

in case that a value of a logical product of the detection results of said first and said second detection circuits is true, an indication is provided to said mobile switch via a signal repeating device to release talking channels for TCP/IP data communication within a mobile communication network.